

due the complicated patterns upon the grinding teeth of Ungulates, which are produced by the wearing away of the dentine and the cement, and the resistance of the enamel.

The centre of the tooth papilla remains soft and forms the pulp of the tooth, which is continuous with the underlying tissues of the gum by a fine canal or a wide cavity as the case may be. In teeth which persistently grow throughout the life-time of the animal, as for example the incisors of the Eodents, there is a wide intercommunication between the cavity of the tooth and the tissues of the gum; only a narrow canal "exists" in, for instance, the teeth of Man, and in fact in the vast majority of cases. The three constituents of the typical teeth are not, however, found in all mammals; the layer which is sometimes wanting is the enamel. This is the case with most Edentates; but the interesting ' discovery has been made (by Tomes) that in the Armadillo there is a downgrowth of the epidermis similar to that which forms the enamel in other mammals, a rudimentary "enamel organ."

Teeth are present in nearly all the Mammalia; and where they are absent there is frequently some evidence to show that the loss is a recent one. The Whalebone Whales, the Monotremata, *Manis*, and the American Anteaters among the Edentata are devoid of teeth in the adult state. In several of these instances, however, more or less rudimentary teeth have been found, which either never cut the gums or else become lost early in life. The latter is the case with *Ornithorhynchus*, where there are teeth up to maturity (see p. 113). Ktikenthal has found germs of teeth in Whales, and Hose in the Oriental *Manis*. The loss of the teeth in these cases seems to have some relation to the nature of the food. In ant-eating mammals, as in the Anteaters and *Echidna*, the ants are licked up by the long and viscid tongue, and require no mastication. Yet it must be remembered that *Qrycteropus* is also an anteater, like the Marsupial *Myrmecobius*, both of which genera have teeth.

The first of the essential peculiarities of the mammalian teeth as compared with those of other vertebrates concerns the

position of the teeth in the mouth. There is no
undoubted
mammal extinct or living in which the teeth are
attached to
any bones other than the dentary, the maxilla,
and the pre-